

REMARKS

The Applicant respectfully requests further examination and reconsideration in view of the arguments set forth below. Claims 1-14, 17-24 and 41-49 were pending in this application. Within the previous Office Action, Claims 1-14, 17-24 and 41-49 have all been rejected. By way of the above amendment, Claims 1, 11, 17, 41 and 43 have been amended. Accordingly, Claims 1-14, 17-24 and 41-49 are still pending in this application.

Rejections Under 35 U.S.C. § 112

Claims 1-14 have been rejected under 35 U.S.C. 112, first paragraph, for containing subject matter which was not described in the specification in such a way as to convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It is stated within the previous Office Action that the disclosure of the instant Application provides support for use of two lasers and support for combining two laser beams. However, it is further stated within the previous Office Action that there is insufficient teaching in the disclosure of the Application to support claim language that recites laser pulses that are combined, wherein each of the laser pulses produce ablation pulses. The Applicant respectfully disagrees for the following reasons.

Throughout the specification of the instant Application that the Applicants refer to a system with a "laser source" and that the laser source comprises "two or more lasers" for operating in ablation mode and coagulation mode. Applicants further state that "ablation mode combines a series of one or more pulses from the laser source." [Specification, Page 11, line 2] Applicant contends that the word "combines" is used herein to denote its common meaning which is to unite, join forces for a single purpose or otherwise make a union of two or more things, in this case laser pulses from two or more lasers. Further, Applicants contend that it would be clear to one skilled in the art that the language "combines pulses" means to combine pulses from the two or more lasers of the laser source to form a single laser output and generate a single operative condition for ablating tissue and coagulating tissue when the system is operating in ablation mode or coagulation mode, respectively. Additional support for a laser system that operates with a single laser output using multiple lasers beams have been presented in a previous communication.

While the Applicant disagrees with the rejection of the claim 1-14 under 35 U.S.C. 112, first paragraph, in order to further the prosecution of the Application, Claims 1 and 11 have been amended to recite claim language which comports with language used in the specification and which clearly supports combining laser pulses from a laser source with multiple lasers to generate a condition for ablation.

The independent Claim 1 now recites medical laser delivery apparatus for delivering a series of laser pulses including non-ablative laser pulses to an area of tissue to be treated and generating a region of coagulation to a controllable coagulation depth under a surface of the area of tissue, the apparatus comprising a laser source for generating the series of laser pulses including the non-ablative laser pulses to be delivered to the area of tissue to be treated in order to raise a temperature at the surface of the area of tissue to be treated to a temperature sufficient to generate coagulation at the coagulation depth when the laser source is in a coagulation mode, wherein the laser source comprises two or more lasers that combines the series of laser pulses from the two or more lasers, when the laser source is in an ablation mode. As discussed above, the independent Claim 1 finds clear support for the recitation of a laser source that comprises two or more lasers that combines a series of laser pulses from the laser source, when the laser source is in an ablation mode.

The independent Claim 11 recites a medical laser comprising a laser source having two or more pulsed lasers for generating pulses of laser light, wherein a series of the pulses of laser light are combined from the laser source for generating a single laser output having a predetermined absorption, wherein the predetermined absorption forms a predetermined coagulation depth and a laser control system coupled to the laser source for controlling the laser source to deliver the laser output to a target area. As discussed above, the independent Claim 11 finds clear support for the recitation of a laser source with two or more pulsed lasers that generate pluses that are combined in the above quoted passage and throughout the originally filed specification.

Claims 2-10 are all dependent from the independent Claim 1 and Claims 12-14 are all dependent from the independent Claim 11. For all of the reasons stated above, rejection of Claims 1-14 under 35 U.S.C. 112, first paragraph is not appropriate and should be withdrawn.

Rejections Under 35 U.S.C. § 102

Within the previous Office Action, Claims 17 and 41 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,125,922 to Dwyer (hereafter "Dwyer"). The Applicants respectfully traverse this rejection. Dwyer fails to teach a system with a laser source

having multiple lasers, wherein pulses from the laser source are combined to generate a single laser output or a single operative condition such as coagulation or ablation, when the system is in coagulation mode or ablation mode, respectively. The teachings of Dwyer have been fully characterized in a previous commination.

5 Briefly, Dwyer teaches a laser device that switches between two laser conditions but fails to teach or suggest combining laser pulses. In contrast to the teachings of Dwyer, the instant invention is directed to a laser system that is capable of operating in an ablation mode and a coagulation mode by using a laser source with two or more lasers, wherein pulses of the lasers are combined to generate a single laser output or a single operative mode. No where in the prior art are the features of combining a series of pulses to generate a single laser output or operative conditions taught or suggested. These and other features are clearly recited in the independent Claims 17 and 41.

15 Specifically, the independent Claim 17 is directed to a medical laser delivery apparatus for treating an area of tissue comprising a laser source having a first laser and a second laser each of which generate laser pulses having a wavelength, the laser source being configured to combine laser pulses of the first laser and the second laser to form a single laser output by a combining apparatus for delivering a series of laser pulses each having a strength and a duration to ablate or coagulate the area of tissue being treated. The medical laser delivery apparatus of Claim 17 also comprises a laser delivery system coupled to the laser source for delivering the laser pulses from the laser source to the area of tissue being treated and a control system coupled to the laser source for controlling generation of the laser pulses from the laser source, wherein the laser source operates in both an ablation mode and a coagulation mode such that when in the ablation mode, the strength and duration of the laser pulses are sufficient to ablate tissue at the area of tissue being treated to a controllable ablation depth and when in the coagulation mode, the strength and duration of the laser pulses are sufficient to generate a coagulation region having a controllable coagulation depth within the tissue remaining at the area of tissue being treated without ablating any tissue. As discussed above, Dwyer fails to teach a medical laser delivery apparatus which has a laser source with a first laser and a second laser that combines lasers pulses to form a single output to generate conditions for ablation and coagulation. For at least these reasons, the independent Claim 17 is allowable over the teachings of Dwyer.

30 The independent Claim 41 is directed to a dual mode medical laser system, for sequentially ablating and coagulating a region of target tissue with ablation laser pulses followed by coagulation laser pulses, the dual mode medical laser system comprising a laser source

comprising a first laser and a second laser for generating a first set of laser pulses and a second set of laser pulses, means to combine pulses of the first set of laser pulses and the second set of laser pulses to provide a single laser output, the single laser output being capable of coagulating tissue with the system in a coagulation mode and ablating tissue with the system in an ablating mode and means to direct the single laser output to the region of the target tissue. As discussed above Dwyer fails to teach a system capable of coagulating tissue with the system in a coagulation mode and ablating tissue with the system in ablation mode which combines laser pulses from multiple lasers to generate a single laser output. For at least these reasons, the independent Claim 41 is allowable over the teachings of Dwyer.

Rejections Under 35 U.S.C. § 103

Within the previous Office Action, Claims 1-3, 6-8, 11-14, 17-19, 41 and 43-49 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,098,426 to Sklar et al. (hereinafter "Sklar") in combination with U.S. Patent No. 4,672,969 to Dew (hereinafter "Dew"), U.S. Patent No. 5,620,435 to Belkin et al. (hereinafter "Belkin") and, the article entitled "Selective Photothermolysis: Precise Microsurgery by Selective Absorption of Pulsed Radiation" by R. Rox Anderson and John A. Parrish (hereinafter "Anderson") and U.S. Patent No. 5,125,922 to Dwyer (hereinafter "Dwyer"). The Applicant respectfully traverses this rejection.

The teachings of Sklar, Dew, Belkin, Anderson and Dwyer have all been fully characterized in previous communications. In summary none of the references cited teach or suggest combining laser pulses from a laser source comprising two or more lasers to generate a single laser output for coagulating or ablating tissue. These features as well as other distinguishing features are recited in the independent Claims 1, 11, 17 and 41.

The independent Claim 1 is directed to medical laser delivery apparatus for delivering a series of laser pulses including non-ablative laser pulses to an area of tissue to be treated and generating a region of coagulation to a controllable coagulation depth under a surface of the area of tissue, the apparatus comprising a laser source for generating the series of laser pulses including the non-ablative laser pulses to be delivered to the area of tissue to be treated in order to raise a temperature at the surface of the area of tissue to be treated to a temperature sufficient to generate coagulation at the coagulation depth when the laser source is in a coagulation mode, wherein the laser source comprises two or more lasers that combines the series of laser pulses from the two or more lasers, when the laser source is in an ablation mode. As discussed above,

neither Sklar, Dew, Belkin, Anderson, Dwyer nor their combination teach or make obvious a laser system comprising a laser source with two or more lasers that combines a series of laser pulses from the two or more lasers when the laser source is in an ablation mode. For at least these reasons, the independent Claim 1 is allowable over the teachings of Sklar, Dew, Belkin,
5 Anderson, Dwyer and their combination.

Claims 2, 3 and 6-8 are all dependent on the independent Claim 1. As described above, the independent Claim 1 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 2, 3 and 6-8 are all also allowable as being dependent upon an allowable base claim.

The independent Claim 11 is directed to a medical laser comprising a laser source having two or more pulsed lasers for generating pulses of laser light, wherein a series of the pulses of laser light are combined from the laser source for generating a single laser output having a predetermined absorption, wherein the predetermined absorption forms a predetermined
5 coagulation depth and a laser control system coupled to the laser source for controlling the laser source to deliver the laser output to a target area. As discussed above, neither Sklar, Dew, Belkin, Anderson, Dwyer nor their combination teach or make obvious a medical laser, wherein pulses of laser light are combined from the laser source for generating a single laser output. For at least these reasons, the independent Claim 11 is allowable over the teachings of Sklar, Dew,
10 Belkin, Anderson, Dwyer and their combination.

Claims 12-14 are all dependent on the independent Claim 11. As described above, the independent Claim 11 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 12-14 are all also allowable as being dependent upon an allowable base claim.

The independent Claim 17 is directed to medical laser delivery apparatus for treating an area of tissue comprising a laser source having a first laser and a second laser each of which generate laser pulses having a wavelength, the laser source being configured to combine laser pulses of the first laser and the second laser to form a single laser output by a combining
15 apparatus for delivering a series of laser pulses each having a strength and a duration to ablate or coagulate the area of tissue being treated. The medical laser delivery apparatus of Claim 17
20 comprises a laser delivery system coupled to the laser source for delivering the laser pulses from

the laser source to the area of tissue being treated and a control system coupled to the laser source for controlling generation of the laser pulses from the laser source, wherein the laser source operates in both an ablation mode and a coagulation mode such that when in the ablation mode, the strength and duration of the laser pulses are sufficient to ablate tissue at the area of tissue being treated to a controllable ablation depth and when in the coagulation mode, the strength and duration of the laser pulses are sufficient to generate a coagulation region having a controllable coagulation depth within the tissue remaining at the area of tissue being treated without ablating any tissue. As discussed above, neither Sklar, Dew, Belkin, Anderson, Dwyer nor their combination teach or make obvious a medical laser delivery apparatus which has a laser source with two or more lasers that combines lasers pulses to generate conditions for ablation and coagulation. For at least these reasons, the independent Claim 17 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination.

Claims 18 and 19 are both dependent on the independent Claim 17. As described above, the independent Claim 17 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 18 and 19 are both allowable as being dependent upon an allowable base claim.

The independent Claim 41 is directed to a dual mode medical laser system, for sequentially ablating and coagulating a region of target tissue with ablation laser pulses followed by coagulation laser pulses, the dual mode medical laser system comprising a laser source comprising a first laser and a second laser for generating a first set of laser pulses and a second set of laser pulses, means to combine pulses of the first set of laser pulses and the second set of laser pulses to provide a single laser output, the single laser output being capable of coagulating tissue with the system in a coagulation mode and ablating tissue with the system in an ablating mode; and means to direct the single laser output to the region of the target tissue. As discussed above, neither Sklar, Dew, Belkin, Anderson, Dwyer nor their combination teach or make obvious a system capable of coagulating tissue with the system in a coagulation mode and ablating tissue with the system in ablation mode which combines laser pulses from multiple laser to generate a single laser output. For at least these reasons, the new independent Claim 41 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination.

Claims 43-49 all dependent on the independent Claim 41. As described above, the independent Claim 41 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 43-49 are all allowable as being dependent upon an allowable base claim.

Within the previous Office Action, Claims 4, 5, 9, 10, 20-24 and 42 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,098,426 to Sklar et al. (hereinafter "Sklar") in combination with U.S. Patent No. 4,672,969 to Dew (hereinafter "Dew"), U.S. Patent No. 5,620,435 to Belkin et al. (hereinafter "Belkin"), the article entitled "Selective
5 Photothermolysis: Precise Microsurgery by Selective Absorption of Pulsed Radiation" by R. Rox Anderson and John A. Parrish (hereinafter "Anderson") and U.S. Patent No. 5,125,922 to Dwyer (hereinafter "Dwyer") and further in view of U.S. Patent No. 5,938,657 to Assa et al. (hereinafter "Assa").

The teachings of Assa have been fully characterized in a previous communications.
10 Again, Assa fails to teach or suggest the features of combining laser pulses from a laser source comprising multiple lasers to generate a single laser output or operative condition.

Claims 4, 5, 9 and 10 are all dependent on the independent Claim 1. As described above, the independent Claim 1 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 4, 5, 9 and 10 are all also allowable as being
15 dependent upon an allowable base claim.

Claims 20-24 are all dependent on the independent Claim 17. As described above, the independent Claim 17 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claims 20-24 are all also allowable as being dependent
upon an allowable base claim.

Claim 42 is dependent on the independent Claim 41. As described above, the independent Claim 41 is allowable over the teachings of Sklar, Dew, Belkin, Anderson, Dwyer and their combination. Accordingly, Claim 42 is also allowable as being dependent upon an
20 allowable base claim.

For the reasons given above, Applicants respectfully submit that the claims are in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

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Respectfully submitted,
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